

5/15/09 CP

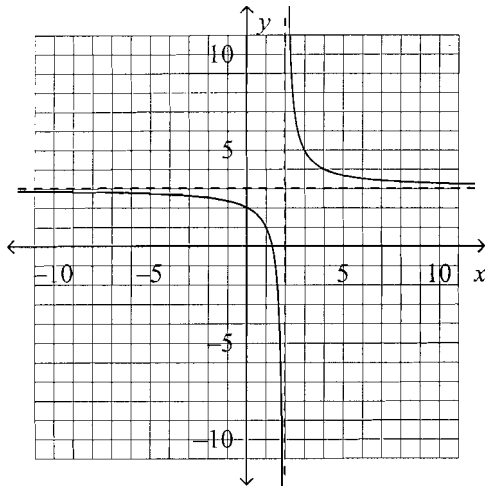
Multiple Choice

Identify the choice that best completes the statement or answers the question.

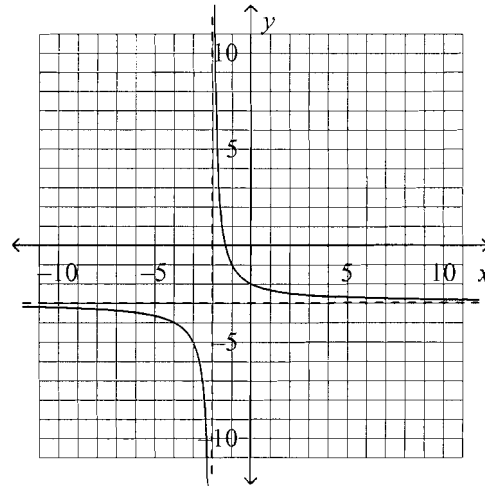
Sketch the asymptotes and graph the function.

1. $y = \frac{2}{x+2} - 3$

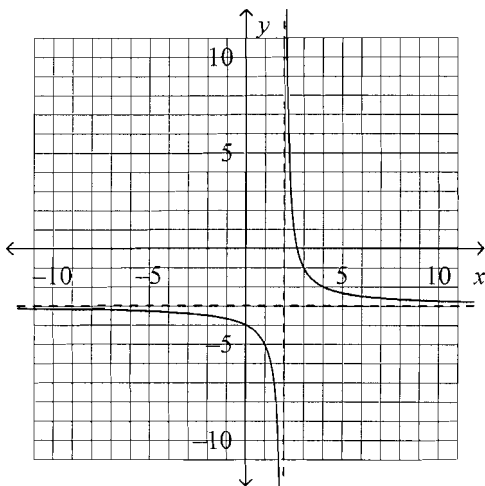
a.



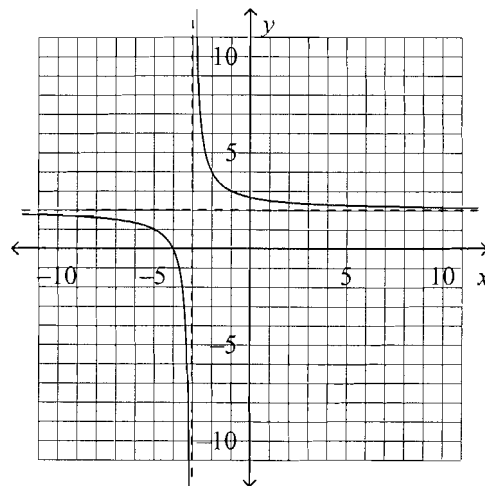
c.



b.



d.



Name: _____

ID: A

C 2. Write an equation for the translation of $y = \frac{4}{x}$ that has the asymptotes $x = 7$ and $y = 6$.

a. $y = \frac{4}{x-6} + 7$

c. $y = \frac{4}{x-7} + 6$

b. $y = \frac{4}{x+7} + 6$

d. $y = \frac{4}{x+6} + 7$

Find any points of discontinuity for the rational function.

C 3. $y = \frac{x-8}{x^2+6x-7}$

a. $x = 1, x = 7$

c. $x = 1, x = -7$

b. $x = 8$

d. $x = -1, x = 7$

D 4. Suppose $f(x) = 4x - 2$ and $g(x) = -2x + 1$.

Find the value of $\frac{f(5)}{g(-1)}$.

a. -2

b. 2

c. $\frac{2}{3}$

d. 6

A 5. through $(-2, -5)$ and perpendicular to $y = -\frac{1}{2}x + 1$.

a. $y = 2x - 1$

b. $y = -\frac{1}{2}x - 6$

c. $y = \frac{1}{2}x - 4$

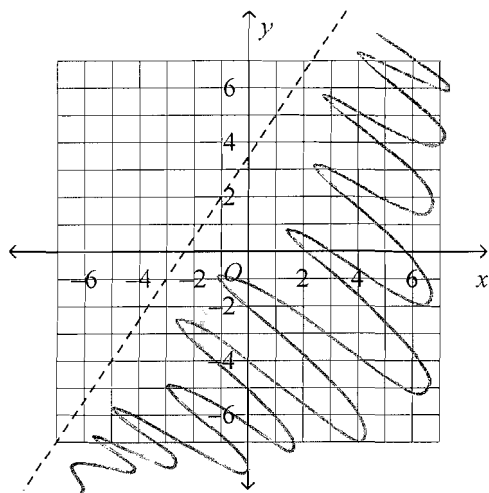
d. $y = -2x - 9$

Graph the inequality.

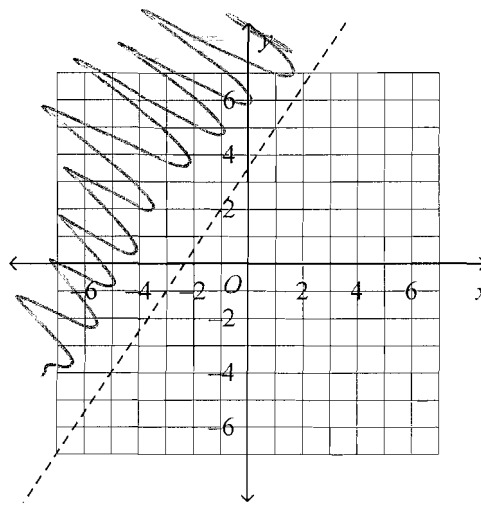
A

6. $-3x + 2y < 7$

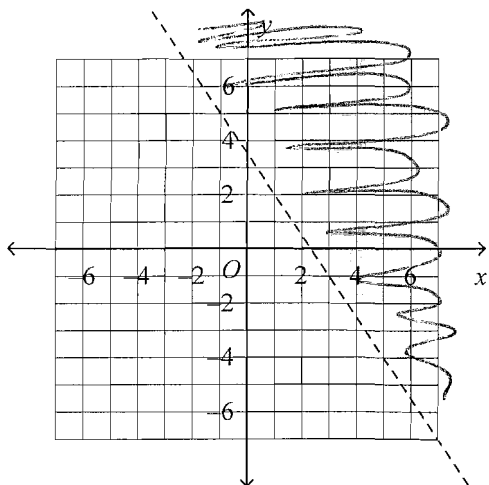
a.



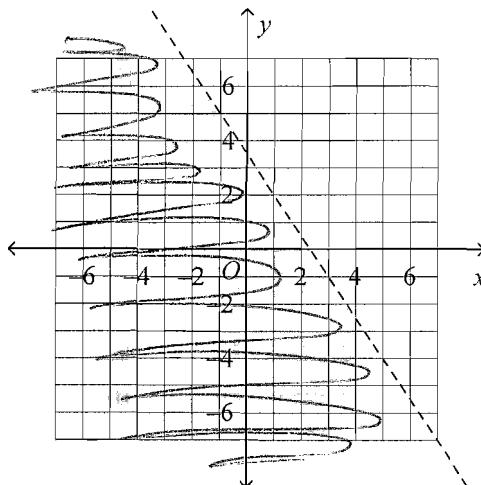
c.



b.



d.



Use the elimination method to solve the system.

D

7.
$$\begin{cases} -x + 2y = 10 \\ -3x + 6y = 11 \end{cases}$$

a. infinite solutions

b. $(-5, 2)$ c. $(5, -2)$

d. no solutions

FoilD

8. $f(x) = (3x + 5)(-4x - 3)$

a. $15x^2 + 27x - 15$

b. $-29x - 15$

c. $-12x^2 - 15$

d. $-12x^2 - 29x - 15$

B

9. Solve by factoring.

$3x^2 + 8x - 60 = 0$

a. $-6, 3$

b. $-6, \frac{10}{3}$

c. $6, -\frac{1}{2}$

d. $\frac{10}{3}, -\frac{1}{2}$

B

10. Find the missing value to complete the square.

$x^2 + 2x + \underline{\hspace{1cm}}$

a. 2

b. 1

c. 4

d. 8

Rewrite the equation in vertex form.D

11. $y = x^2 + 10x + 16$

a. $y = (x + 5)^2 + 41$

b. $y = (x + 10)^2 - 9$

c. $y = (x + 10)^2 + 11$

d. $y = (x + 5)^2 - 9$

Solve the equation.A

12. $-2x^2 + x + 8 = 0$

a. $\frac{1}{4} \pm \frac{\sqrt{65}}{4}$

b. $4 \pm \frac{\sqrt{130}}{4}$

c. $\frac{1}{2} \pm \frac{\sqrt{65}}{2}$

d. $\frac{1}{4} \pm \frac{\sqrt{32}}{2}$

Simplify the expression.B

13. $(-3)^{-2}$

a. $-\frac{1}{9}$

b. $\frac{1}{9}$

c. 6

d. 9

A

14. $(3xy^3)^2(xy)^6$

a. $9x^8y^{12}$

b. $3x^8y^{12}$

c. $2x^3y^{12}$

d. $9x^8y^9$

- D 15. Find the zeros of $y = x(x - 3)(x - 2)$.
a. 3, 2, -3 c. 3, 2
b. 0, -3, -2 d. 0, 3, 2
- B 16. Write a polynomial function in standard form with zeros at 5, -4, and 1.
a. $f(x) = x^3 - 2x^2 - 19x - 9$ c. $f(x) = x^3 - 21x^2 + 60x - 9$
b. $f(x) = x^3 - 2x^2 - 19x + 20$ d. $f(x) = x^3 + 20x^2 - 2x - 19$
- A 17. An initial population of 895 quail increases at an annual rate of 7%. Write an exponential function to model the quail population.
a. $f(x) = 895(1.07)^x$ c. $f(x) = 895(0.07)^x$
b. $f(x) = 895(7)^x$ d. $f(x) = (895 \cdot 0.07)^x$
- B 18. Find the annual percent increase or decrease that $y = 0.35(2.3)^x$ models.
a. 230% increase c. 30% decrease
b. 130% increase d. 65% decrease
- D 19. Suppose you invest \$1600 at an annual interest rate of 4.6% compounded continuously. How much will you have in the account after 4 years?
a. \$800.26 b. \$6,701.28 c. \$10,138.07 d. \$1,923.23

Write the equation in logarithmic form.

- A 20. $6^4 = 1,296$
a. $\log_6 1,296 = 4$ c. $\log 1,296 = 4 \cdot 6$
b. $\log 1,296 = 4$ d. $\log_4 1,296 = 6$

Evaluate the logarithm.

- C 21. $\log_5 \frac{1}{625}$
a. -3 b. 5 c. -4 d. 4

Write the expression as a single logarithm.

A

22. $5 \log_b q + 2 \log_b y$

a. $\log_b(q^5 y^2)$

c. $\log_b(q^5 + y^2)$

b. $(5 + 2) \log_b(q + y)$

d. $\log_b(qy^{5+2})$

C

23. Solve $125^{9x-2} = 150$.

a. -1.8847

b. -0.1069

c. 0.3375

d. 1.0378

B

24. Solve $\log(4x + 10) = 3$.

a. $-\frac{7}{4}$

b. $\frac{495}{2}$

c. 250

d. 990

B

25. Solve $\log 3x + \log 9 = 0$. Round to the nearest hundredth if necessary.

a. 0.33

b. 0.04

c. 3

d. 27

Completion

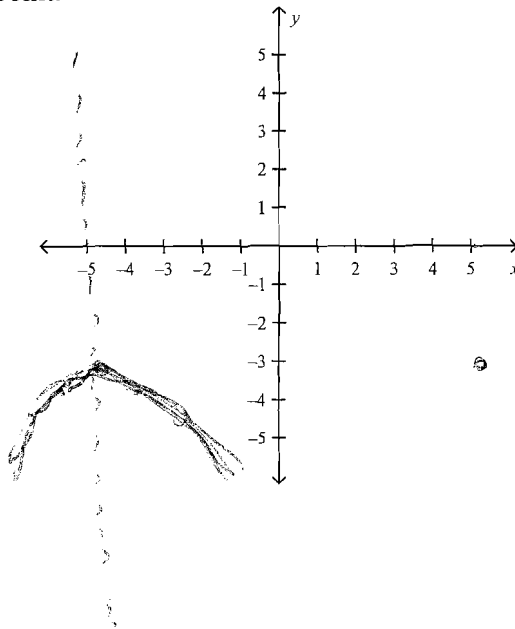
Complete each statement.

26. Graph $y = \frac{-1}{2}(x+5)^2 - 3$

Identify the vertex,
axis of symmetry and
one additional point.

$$V(-5, -3)$$

$$x = -5$$



Short Answer

27. Is the relation $\{(-5, -4), (1, -4), (4, -2), (-1, 4), (-2, -4)\}$ a function? Explain.

yes

Other

28. In a particular region of a national park, there are currently 330 deer, and the population is increasing at an annual rate of 11%.

a. Write an exponential function to model the deer population.

$$y = 330(1.11)^x$$

b. Explain what each value in the model represents.

c. Predict the number of deer that will be in the region after five years. Show your work.

$$y = 330(1.11)^5$$

$$y \approx 556$$